COMMENTS OF BELLSOUTH

CC DOCKET NO. 01-318

JANUARY 22, 2002

ATTACHMENT 2, PART 2

1. **Calculate the aggregate test statistic, Z^T.**

$$Z^T = \frac{\sum_j W_j Z_j^* - \sum_j W_j E(Z_j^* \mid H_0)}{\sqrt{\sum_j W_j^2 \mathrm{Var}(Z_j^* \mid H_0)}}$$

The Balancing Critical Value

There are four key elements of the statistical testing process:

1. the null hypothesis, H_0, that parity exists between ILEC and CLEC services
2. the alternative hypothesis, H_a, that the ILEC is giving better service to its own customers
3. the Truncated Z test statistic, Z^T, and
4. a critical value, c

The decision rule[2] is

- If $Z^T < c$ then accept H_a.
- If $Z^T \geq c$ then accept H_0.

There are two types of error possible when using such a decision rule:

Type I Error: Deciding favoritism exists when there is, in fact, no favoritism.
Type II Error: Deciding parity exists when there is, in fact, favoritism.

The probabilities of each type of each are:

Type I Error: $\alpha = P(Z^T < c \mid H_0)$.
Type II Error: $\beta = P(Z^T \geq c \mid H_a)$.

We want a balancing critical value, c_B, so that $\alpha = \beta$.

[2] This decision rule assumes that a negative test statistic indicates poor service for the CLEC customer. If the opposite is true, then reverse the decision rule.

It can be shown that.

$$c_B = \frac{\sum_j W_j M(m_j, se_j) - \sum_j W_j \frac{-1}{\sqrt{2\pi}}}{\sqrt{\sum_j W_j^2 V(m_j, se_j)} + \sqrt{\sum_j W_j^2 \left(\frac{1}{2} - \frac{1}{2\pi}\right)}}.$$

where

$$M(\mu,\sigma) = \mu\Phi(\tfrac{-\mu}{\sigma}) - \sigma\phi(\tfrac{-\mu}{\sigma})$$

$$V(\mu,\sigma) = (\mu^2 + \sigma^2)\Phi(\tfrac{-\mu}{\sigma}) - \mu\sigma\phi(\tfrac{-\mu}{\sigma}) - M(\mu,\sigma)^2$$

$\Phi(\cdot)$ is the cumulative standard normal distribution function, and $\phi(\cdot)$ is the standard normal density function.

This formula assumes that Z_j is approximately normally distributed within cell j. When the cell sample sizes, n_{1j} and n_{2j}, are small this may not be true. It is possible to determine the cell mean and variance under the null hypothesis when the cell sample sizes are small. It is much more difficult to determine these values under the alternative hypothesis. Since the cell weight, W_j will also be small (see calculate weights section above) for a cell with small volume, the cell mean and variance will not contribute much to the weighted sum. Therefore, the above formula provides a reasonable approximation to the balancing critical value.

The values of m_j and se_j will depend on the type of performance measure.

Mean Measure

For mean measures, one is concerned with two parameters in each cell, namely, the mean and variance. A possible lack of parity may be due to a difference in cell means, and/or a difference in cell variances. One possible set of hypotheses that capture this notion, and take into account the assumption that transaction are identically distributed within cells is:

H_0: $\mu_{1j} = \mu_{2j}$, $\sigma_{1j}^2 = \sigma_{2j}^2$

H_a: $\mu_{2j} = \mu_{1j} + \delta_j \cdot \sigma_{1j}$, $\sigma_{2j}^2 = \lambda_j \cdot \sigma_{1j}^2$ $\quad \delta_j > 0$, $\lambda_j \geq 1$ and $j = 1,\ldots,L$.

Under this form of alternative hypothesis, the cell test statistic Z_j has mean and standard error given by

$$m_j = \frac{-\delta_j}{\sqrt{\frac{1}{n_{1j}} + \frac{1}{n_{2j}}}}, \text{ and}$$

$$se_j = \sqrt{\frac{\lambda_j n_{1j} + n_{2j}}{n_{1j} + n_{2j}}}$$

Proportion Measure

For a proportion measure there is only one parameter of interest in each cell, the proportion of transaction possessing an attribute of interest. A possible lack of parity may be due to a difference in cell proportions. A set of hypotheses that take into account the assumption that transaction are identically distributed within cells while allowing for an analytically tractable solution is:

$$H_0: \frac{p_{2j}(1-p_{1j})}{(1-p_{2j})p_{1j}} = 1$$

$$H_a: \frac{p_{2j}(1-p_{1j})}{(1-p_{2j})p_{1j}} = \psi_j \qquad \psi_j > 1 \text{ and } j = 1,\ldots,L.$$

These hypotheses are based on the "odds ratio." If the transaction attribute of interest is a missed trouble repair, then an interpretation of the alternative hypothesis is that a CLEC trouble repair appointment is ψ_j times more likely to be missed than an ILEC trouble.

Under this form of alternative hypothesis, the within cell asymptotic mean and variance of a_{1j} are given by[3]

$$E(a_{1j}) = n_j \pi_j^{(1)}$$

$$\text{var}(a_{1j}) = \frac{n_j}{\frac{1}{\pi_j^{(1)}} + \frac{1}{\pi_j^{(2)}} + \frac{1}{\pi_j^{(3)}} + \frac{1}{\pi_j^{(4)}}}$$

[3] Stevens, W. L. (1951) Mean and Variance of an entry in a Contingency Table. *Biometrica*, **38**, 468-470.

where

$$\pi_j^{(1)} = f_j^{(1)}\left(n_j^2 + f_j^{(2)} + f_j^{(3)} - f_j^{(4)}\right)$$
$$\pi_j^{(2)} = f_j^{(1)}\left(-n_j^2 - f_j^{(2)} + f_j^{(3)} + f_j^{(4)}\right)$$
$$\pi_j^{(3)} = f_j^{(1)}\left(-n_j^2 + f_j^{(2)} - f_j^{(3)} + f_j^{(4)}\right)$$
$$\pi_j^{(4)} = f_j^{(1)}\left(n_j^2\left(\tfrac{2}{\psi_j} - 1\right) - f_j^{(2)} - f_j^{(3)} - f_j^{(4)}\right)$$
$$f_j^{(1)} = \frac{1}{2n_j^2\left(\tfrac{1}{\psi_j} - 1\right)}$$
$$f_j^{(2)} = n_j n_{1j}\left(\tfrac{1}{\psi_j} - 1\right)$$
$$f_j^{(3)} = n_j a_j\left(\tfrac{1}{\psi_j} - 1\right)$$
$$f_j^{(4)} = \sqrt{n_j^2\left[4n_{1j}\left(n_j - a_j\right)\left(\tfrac{1}{\psi_j} - 1\right) + \left(n_j + \left(a_j - n_{1j}\right)\left(\tfrac{1}{\psi_j} - 1\right)\right)^2\right]}$$

Recall that the cell test statistic is given by

$$Z_j = \frac{n_j\, a_{1j} - n_{1j}\, a_j}{\sqrt{\dfrac{n_{1j}\, n_{2j}\, a_j\, (n_j - a_j)}{n_j - 1}}}.$$

Using the equations above, we see that Z_j has mean and standard error given by

$$m_j = \frac{n_j^2 \pi_j^{(1)} - n_{1j}\, a_j}{\sqrt{\dfrac{n_{1j}\, n_{2j}\, a_j\, (n_j - a_j)}{n_j - 1}}}, \text{ and}$$

$$se_j = \sqrt{\frac{n_j^3 (n_j - 1)}{n_{1j}\, n_{2j}\, a_j\, (n_j - a_j)\left(\frac{1}{\pi_j^{(1)}} + \frac{1}{\pi_j^{(2)}} + \frac{1}{\pi_j^{(3)}} + \frac{1}{\pi_j^{(4)}}\right)}}.$$

Rate Measure

A rate measure also has only one parameter of interest in each cell, the rate at which a phenomenon is observed relative to a base unit, e.g. the number of troubles per available line. A possible lack of parity may be due to a difference in cell rates. A set of hypotheses that take into account the assumption that transaction are identically distributed within cells is:

$$H_0: r_{1j} = r_{2j}$$

$$H_a: r_{2j} = \varepsilon_j r_{1j} \qquad \varepsilon_j > 1 \text{ and } j = 1,\ldots,L.$$

Given the total number of ILEC and CLEC transactions in a cell, n_j, and the number of base elements, b_{1j} and b_{2j}, the number of ILEC transaction, n_{1j}, has a binomial distribution from n_j trials and a probability of

$$q_j^* = \frac{r_{1j}b_{1j}}{r_{1j}b_{1j} + r_{2j}b_{2j}}.$$

Therefore, the mean and variance of n_{1j}, are given by

$$E(n_{1j}) = n_j q_j^*$$
$$\operatorname{var}(n_{1j}) = n_j q_j^*(1 - q_j^*)$$

Under the null hypothesis

$$q_j^* = q_j = \frac{b_{1j}}{b_j},$$

but under the alternative hypothesis

$$q_j^* = q_j^a = \frac{b_{1j}}{b_{1j} + \varepsilon_j b_{2j}}.$$

Recall that the cell test statistic is given by

$$Z_j = \frac{n_{1j} - n_j\, q_j}{\sqrt{n_j\, q_j(1 - q_j)}}.$$

Using the relationships above, we see that Z_j has mean and standard error given by

$$m_j = \frac{n_j\left(q_j^a - q_j\right)}{\sqrt{n_j q_j (1-q_j)}} = (1-\varepsilon_j)\frac{\sqrt{n_j b_{1j} b_{2j}}}{b_{1j} + \varepsilon_j b_{2j}}, \text{ and}$$

$$se_j = \sqrt{\frac{q_j^a(1-q_j^a)}{q_j(1-q_j)}} = \sqrt{\varepsilon_j}\frac{b_j}{b_{1j} + \varepsilon_j b_{2j}}.$$

Ratio Measure

As with mean measures, one is concerned with two parameters in each cell, the mean and variance, when testing for parity of ratio measures. As long as sample sizes are large, as in the case of billing accuracy, the same method for finding m_j and se_j that is used for mean measures can be used for ratio measures.

Determining the Parameters of the Alternative Hypothesis

In this appendix we have indexed the alternative hypothesis of mean measures by two sets of parameters, λ_j and δ_j. Proportion and rate measures have been indexed by one set of parameters each, ψ_j and ε_j respectively. A major difficulty with this approach is that more than one alternative will be of interest; for example we may consider one alternative in which all the δ_j are set to a common non-zero value, and another set of alternatives in each of which just one δ_j is non-zero, while all the rest are zero. There are very many other possibilities. Each possibility leads to a single value for the balancing critical value; and each possible critical value corresponds to many sets of alternative hypotheses, for each of which it constitutes the correct balancing value.

The formulas we have presented can be used to evaluate the impact of different choices of the overall critical value. For each putative choice, we can evaluate the set of alternatives for which this is the correct balancing value. While statistical science can be used to evaluate the impact of different choices of these parameters, there is not much that an appeal to statistical principles can offer in directing specific choices. Specific choices are best left to telephony experts. Still, it is possible to comment on some aspects of these choices:

- Parameter Choices for λ_j. The set of parameters λ_j index alternatives to the null hypothesis that arise because there might be greater unpredictability or variability in the delivery of service to a CLEC customer over that which would be achieved for an otherwise comparable ILEC customer. While concerns about differences in the variability of service are important, it turns out that the truncated Z testing which is being recommended here is relatively insensitive to all but very large values of the λ_j. Put another way, reasonable differences in the values chosen here could make very little difference in the balancing points chosen.

- Parameter Choices for δ_j. The set of parameters δ_j are much more important in the choice of the balancing point than was true for the λ_j. The reason for this is that they directly index differences in average service. The truncated Z test is very sensitive to any such differences; hence, even small disagreements among experts in the choice of the δ_j could be very important. Sample size matters here too. For example, setting all the δ_j to a single value – $\delta_j = \delta$ – might be fine for tests across individual CLECs where currently within the state the CLEC customer bases are not too different. Using the same value of δ for the overall state testing does not seem sensible. At the state level we are aggregating over CLECs, so using the same δ as for an individual CLEC would be saying that a "meaningful" degree of disparity is one where the violation is the same (δ) for each CLEC. But the detection of disparity for any component CLEC is important, so the relevant "overall" δ should be smaller.

- Parameter Choices for ψ_j or ε_j. The set of parameters ψ_j or ε_j are also important in the choice of the balancing point for tests of their respective measures. The reason for this is that they directly index increases in the proportion or rate of service performance. The truncated Z test is sensitive to such increases; but not as sensitive as the case of δ for mean measures. Sample size matters here too. As with mean measures, using the same value of ψ or ε for the overall state testing does not seem sensible.

The three parameters are related however. If a decision is made on the value of δ, it is possible to determine equivalent values of ψ and ε. The following equations, in conjunction with the definitions of ψ and ε, show the relationship with delta.

$$\delta = 2 \cdot \arcsin(\sqrt{\hat{p}_2}) - 2 \cdot \arcsin(\sqrt{\hat{p}_1})$$
$$\delta = 2\sqrt{\hat{r}_2} - 2\sqrt{\hat{r}_1}$$

The bottom line here is that beyond a few general considerations, like those given above, a principled approach to the choice of the alternative hypotheses to guard against must come from elsewhere.

Decision Process

Once Z^T has been calculated, it is compared to the balancing critical value to determine if the ILEC is favoring its own customers over a CLEC's customers.

This critical value changes as the ILEC and CLEC transaction volume change. One way to make this transparent to the decision-maker, is to report the difference between the test statistic and the critical value, $diff = Z^T - c_B$. If favoritism is concluded when $Z^T < c_B$, then the $diff < 0$ indicates favoritism.

This makes it very easy to determine favoritism: a positive *diff* suggests no favoritism, and a negative *diff* suggests favoritism.

Corrections

LPSC "Statistical Techniques for the Analysis and Comparison of Performance Measure Data",

Appendix A, page A-5

$$T_j = t_j + \frac{g}{6}\left(\frac{n_{1j} + 2n_{2j}}{\sqrt{n_{1j}\, n_{2j}(n_{1j} + n_{2j})}}\right)\left(t_j^2 + \frac{n_{2j} - n_{1j}}{n_{1j} + 2n_{2j}}\right)$$

Appendix C, page C-8, rate measures section for balancing critical value.

$$m_j = \frac{n_j\left(q_j^a - q_j\right)}{\sqrt{n_j q_j (1 - q_j)}} = (1 - \varepsilon_j)\frac{\sqrt{n_j b_{1j} b_{2j}}}{b_{1j} + \varepsilon_j b_{2j}}$$

APPENDIX E

BST SEEM Remedy Procedure

BST SEEM REMEDY PROCEDURE

TIER-1 CALCULATION FOR RETAIL ANALOGUES:

1. Calculate the overall test statistic for each CLEC; $z^T_{CLEC\text{-}1}$ (Per Statistical Methodology discussed in Appendix C)
2. Calculate the balancing critical value (${}^cB_{CLEC\text{-}1}$) that is associated with the alternative hypothesis (for fixed parameters δ,Ψ, or ε)
3. If the overall test statistic is equal to or above the balancing critical value, stop here. That is, if ${}^cB_{CLEC\text{-}1} < z^T_{CLEC\text{-}1}$, stop here. Otherwise, go to step 4.
4. Calculate the Parity Gap by subtracting the value of step 2 from that of step 1. ABS ($z^T_{CLEC\text{-}1}$ - ${}^cB_{CLEC\text{-}1}$)
5. Calculate the Volume Proportion using a linear distribution with slope of ¼. This can be accomplished by taking the absolute value of the Parity Gap from step 4 divided by 4; ABS (($z^T_{CLEC\text{-}1}$ - ${}^cB_{CLEC\text{-}1}$) / 4). All parity gaps equal or greater to 4 will result in a volume proportion of 100%.
6. Calculate the Affected Volume by multiplying the Volume Proportion from step 5 by the Total Impacted CLEC-$_1$ Volume (I_c) in the negatively affected cell; where the cell value is negative.
7. Calculate the payment to CLEC-1 by multiplying the result of step 6 by the appropriate dollar amount from the fee schedule.
8. Then, CLEC-1 payment = Affected Volume$_{CLEC1}$ * $$ from Fee Schedule

Example: CLEC-1 Missed Installation Appointments (MIA) for Resale POTS.

Cell (j)	ILEC Sample Size (n_{1j})	No. ILEC Misses (a_{1j})	ILEC Prop. of Misses (p_{1j})	CLEC Sample Size (n_{2j})	No. CLEC Misses (a_{2j})	CLEC Prop. of Misses (p_{2j})	Total Sample (n)	Total No. of Misses (a)	Z Score (Z_j)	Weight (W_j)	Truncated Score (Z_j^*)
1	8	0	0.00	1	1	1.00	9	1	-2.83	0.30	-2.83
2	24	2	0.08	9	4	0.44	33	6	-2.36	0.99	-2.36
3	112	17	0.15	10	1	0.10	122	18	0.44	1.07	0.00
4	112	17	0.15	3	1	0.33	115	18	-0.85	0.62	-0.85
5	15	3	0.20	1	1	1.00	16	4	-1.73	0.42	-1.73
6	36	3	0.08	16	2	0.13	52	5	-0.47	0.98	-0.47
7	10	0	0.00	8	1	0.13	18	1	-1.12	0.48	-1.12
8	8	1	0.13	1	0	0.00	9	1	0.35	0.30	0.00
9	4	2	0.50	6	2	0.33	10	4	0.50	0.76	0.00
10	79	16	0.20	1	0	0.00	80	16	0.50	0.40	0.00

Null Mean (M_{0j})	Null Variance (V_{0j})	Numerator Truncated Z ($W_j*(Z_j* - M_{0j})$)	Denominator Truncated Z ($W_j^2*V_{0j}$)	Alternative Mean (M_{aj})	Alternative Variance (V_{aj})	Balancing Critical Value Numerator ($W_j*(M_{aj}+.399)$)	Balancing Critical Value Denominator(1) ($W_j^2*V_{aj}$)	Balancing Critical Value Denominator(2) ($W_j^2*.341$)	Effected Transactions (n_e)	Number of Occurances to be Remedied (V_p*n_e)
-0.31	0.79	-0.74	0.07	-0.71	0.71	-0.09	0.06	0.030	1	1
-0.42	0.36	-1.92	0.35	-0.88	0.70	-0.48	0.69	0.332	4	2
-0.42	0.40	0.45	0.46	-1.05	0.92	-0.70	1.06	0.394	0	0
-0.45	0.46	-0.25	0.18	-0.79	0.76	-0.24	0.29	0.131	1	1
-0.43	0.56	-0.54	0.10	-0.61	0.54	-0.09	0.10	0.060	1	1
-0.42	0.36	-0.04	0.35	-0.88	0.71	-0.48	0.68	0.328	2	1
-0.50	0.31	-0.30	0.07	-0.67	0.47	-0.13	0.11	0.079	1	1
-0.31	0.79	0.09	0.07	-0.71	0.71	-0.09	0.06	0.030	0	0
-0.43	0.32	0.33	0.18	-0.85	0.54	-0.34	0.31	0.196	0	0
-0.40	0.64	0.16	0.10	-0.65	0.62	-0.10	0.10	0.054	0	0
	Sum	-2.77	1.94			-2.73	3.47	1.63		7
	Truncated Z (Z^T)		**-1.99**			**Balancing Critical Value (c_B)**		**-0.87**		

BELLSOUTH®

Parity Gap	**1.12**
Volume Proportion (V_p)	**0.28**
Total Transactions to Remedy	**7**

Payout is (7 units) * ($100/unit) = $700

TIER-2 CALCULATION for RETAIL ANALOGUES:

1. Tier-2 is triggered by three consecutive monthly failures of any Tier 2 Remedy Plan sub-metric.
2. Therefore, calculate monthly statistical results and affected volumes as outlined in steps 2 through 6 for the CLEC Aggregate performance. Determine average monthly affected volume for the rolling 3-month period.
3. Calculate the payment to State Designated Agency by multiplying average monthly volume by the appropriate dollar amount from the Tier-2 fee schedule.
4. Therefore, State Designated Agency payment = Average monthly volume * $$ from Fee Schedule

BELLSOUTH®

Example: CLEC-A Missed Installation Appointments (MIA) for Resale POTS

Cell (j)	ILEC Sample Size (n_{1j})	No. ILEC Misses (a_{1j})	ILEC Prop. of Misses (p_{1j})	CLEC Sample Size (n_{2j})	No. CLEC Misses (a_{2j})	CLEC Prop. of Misses (p_{2j})	Total Sample (n)	Total No. of Misses (a)	Z Score (Z_j)	Weight (W_j)	Truncated Score (Z_j^*)
1	800	100	0.13	100	15	0.15	900	115	-0.71	3.15	-0.71
2	2400	500	0.21	900	90	0.10	3300	590	7.23	9.80	0.00
3	11200	1700	0.15	1000	100	0.10	12200	1800	4.42	10.75	0.00
4	11200	1700	0.15	300	75	0.25	11500	1775	-4.65	6.18	-4.65
5	1500	300	0.20	1000	100	0.10	2500	400	6.68	8.98	0.00
6	3600	300	0.08	1600	200	0.13	5200	500	-4.70	9.81	-4.70
7	1000	195	0.20	800	100	0.13	1800	295	3.99	7.80	0.00
8	800	100	0.13	100	10	0.10	900	110	0.72	3.09	0.00
9	400	200	0.50	600	200	0.33	1000	400	5.27	7.59	0.00
10	7900	1600	0.20	100	5	0.05	8000	1605	3.78	3.98	0.00

Null Mean M_{0j}	Null Variance V_{0j}	Numerator Truncated Z $W_j*(Z_j^* - M_{0j})$	Denominator Truncated Z $W_j^2*V_{0j}$	Alternative Mean M_{aj}	Alternative Variance V_{aj}	Balancing Critical Value Numerator $W_j*(M_{aj}+.399)$	Balancing Critical Value Denominator(1) $W_j^2*V_{aj}$	Balancing Critical Value Denominator(2) $W_j^2*.341$	Effected Transactions n_e	Number of Occurances to be Remedied V_p*n_e
-0.31	0.79	-1.23	7.83	-0.71	0.71	-0.99	6.99	3.377	15	9
-0.42	0.36	4.10	34.80	-0.88	0.70	-4.73	67.63	32.756	0	0
-0.42	0.40	4.48	46.45	-1.05	0.92	-6.96	106.24	39.355	0	0
-0.45	0.46	-25.92	17.53	-0.79	0.76	-2.41	29.10	12.998	75	41
-0.43	0.56	3.89	45.36	-0.61	0.54	-1.89	43.69	27.486	0	0
-0.42	0.36	-42.01	35.11	-0.88	0.71	-4.76	68.27	32.812	200	109
-0.50	0.31	3.88	18.80	-0.67	0.47	-2.08	28.76	20.758	0	0
-0.31	0.79	0.97	7.53	-0.71	0.71	-0.97	6.72	3.250	0	0
-0.43	0.32	3.25	18.22	-0.85	0.54	-3.40	31.33	19.633	0	0
-0.40	0.64	1.59	10.14	-0.65	0.62	-0.99	9.87	5.398	0	0
	Sum	-47.00	241.76			-29.18	398.60	197.82		159

BELLSOUTH®

Truncated Z (Z^T)	**-3.02**	**Balancing Critical Value (c_B)**	**-0.86**
		Parity Gap	**2.17**
		Volume Proportion (V_p)	**0.54**
		Total Transactions to Remedy	**159**

Assume Months 2 and 3 have the same affected volumes. Payout (159 units) * ($300/unit) = $47,700

TIER-1 CALCULATION FOR BENCHMARKS

1. For each CLEC, with five or more observations, calculate monthly performance results for the State.

2. CLECs having observations (sample sizes) between 5 and 30 will use Table I below. The only exception will be for Firm Order Confirmation - Mechanized.

Table I **Small Sample Size Table (95% Confidence)**

Sample Size	Equivalent 90% Benchmark	Equivalent 95% Benchmark	Sample Size	Equivalent 90% Benchmark	Equivalent 95% Benchmark
5	60.00%	80.00%	16	75.00%	87.50%
6	66.67%	83.33%	17	76.47%	82.35%
7	71.43%	85.71%	18	77.78%	83.33%
8	75.00%	75.00%	19	78.95%	84.21%
9	66.67%	77.78%	20	80.00%	85.00%
10	70.00%	80.00%	21	76.19%	85.71%
11	72.73%	81.82%	22	77.27%	86.36%
12	75.00%	83.33%	23	78.26%	86.96%
13	76.92%	84.62%	24	79.17%	87.50%
14	78.57%	85.71%	25	80.00%	88.00%
15	73.33%	86.67%	26	80.77%	88.46%
			27	81.48%	88.89%
			28	78.57%	89.29%
			29	79.31%	86.21%
			30	80.00%	86.67%

3. If the percentage (or equivalent percentage for small samples) meets the benchmark standard, stop here. Otherwise, go to step 4.

4. Determine the Volume Proportion by taking the difference between the benchmark and the actual performance result.

5. Calculate the Affected Volume by multiplying the Volume Proportion from step 4 by the Total Impacted $CLEC_{-1}$ Volume.

6. Calculate the payment to CLEC-1 by multiplying the result of step 5 by the appropriate dollar amount from the fee schedule.

   CLEC-1 payment = Affected $Volume_{CLEC-1}$ * $$ from Fee Schedule

Example: CLEC-1 Firm Order Confirmation - Mechanized

	n_C	Benchmark	MIA_C	Volume Proportion	Affected Volume
State	600	95% in 3 hr.	90% in 3 hr.	.05	30

Payout for CLEC-1 is (30 units) * ($5000/unit) = $150,000

TIER-1 CALCULATION FOR BENCHMARKS (in the form of a target):

1. For each CLEC with five or more observations calculate monthly performance results for the State.

2. CLECs having observations (sample sizes) between 5 and 30 will use Table I above.

3. Calculate the interval distribution based on the same data set used in step 1.

4. If the 'percent within' (or equivalent percentage for small samples) meets the benchmark standard, stop here. Otherwise, go to step 5.

5. Determine the Volume Proportion by taking the difference between benchmark and the actual performance result.

6. Calculate the Affected Volume by multiplying the Volume Proportion from step 5 by the Total $CLEC_{-1}$ Volume.

7. Calculate the payment to CLEC-1 by multiplying the result of step 6 by the appropriate dollar amount from the fee schedule.

CLEC-1 payment = Affected $Volume_{CLEC1}$ * $$ from Fee Schedule

Example: CLEC-1 Reject Interval

	n_C	Benchmark	Reject Timeliness	Volume Proportion	Affected Volume
State	600	97% within 1 hour	93% within 1 hour	.04	24

Payout for CLEC-1 is (24 units) * ($100/unit) = $2,400

TIER-2 CALCULATIONS for BENCHMARKS:

Tier-2 calculations for benchmark measures are the same as the Tier-1 benchmark calculations, except the CLEC Aggregate data is evaluated over a three consecutive month period.